

REMARKS

Initially, Applicants would like to express their appreciation to the Examiner for the detailed Official Action provided, for the indication that the drawings are acceptable and for the acknowledgment of Applicants' Information Disclosure Statement by return of the Form PTO-1449.

Upon entry of the above amendments, claims 2 and 29 will have been canceled, and claims 1, 3-6, 8, 11, 18-22, 28 and 30-33 will have been amended. Claims 1, 3-28 and 30-33 are currently pending. Applicants respectfully request reconsideration of the outstanding objections and rejections, and allowance of all the claims pending in the present application.

On page 2 of the Official Action, claims 21-23 were rejected under 35 U.S.C. §112, second paragraph. Applicants respectfully traverse the rejection under 35 U.S.C. §112, second paragraph.

In regard to claims 21 and 22, Applicants note that these claims have been amended to provide proper antecedent basis for the "exit aperture". In regard to claim 23, Applicants note that this claim depends from claim 20, which itself depends from claim 1, which recites "an extensible member". Accordingly, Applicants submit that there is proper antecedent basis for the term "said extensible member" in claim 23.

Accordingly, for all of the above-noted reasons, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §112, second paragraph.

On pages 2-5 of the Official Action, claims 1, 2, 6-12, 15-20, 22-29 and 33 were rejected under 35 U.S.C. § 102(b) as being anticipated by TAKEHANA et al. (U.S. Patent No. 4,884,557).

Applicants respectfully traverse the rejection of claims 1, 2, 6-12, 15-20, 22-29 and 33 under 35 U.S.C. § 102(b).

Claim 1 recites, inter alia, “A position control apparatus for controlling position along a depth or z axis, comprising: an extensible member that can be extended and contracted along said axis, comprising shape memory alloy configured and positioned to expand and contract linearly along said axis”.

Claim 28 recites, inter alia, “A method of providing positioning control of a position along a depth or z axis, comprising: providing an extensible member that can be extended and contracted along said axis, comprising shape memory alloy configured and positioned to expand and contract linearly along said axis”.

Claim 33 recites, inter alia, “controlling the position along a depth or z axis of an observational field of said endoscopy or colonoscopy at least in part by a shape memory alloy”.

Applicants submit that TAKEHANA et al. lacks any disclosure of *controlling a position along a depth or z axis*. In this regard, Applicants note that TAKEHANA et al. is directed to the use of a shape memory alloy for controlling a bending degree or angle, and not a position along a depth or z axis. Note, for example, the Title, the Abstract, and the discussion at columns 1 and 2 of TAKEHANA et al. Further, note the bending depicted in Figs. 17, 18 and 26A-26C of TAKEHANA et al. Contrast this, for example, with the shape memory

alloy 28 which linearly expands/contracts axially in order to control position in the depth or z direction 12, as depicted in Fig. 1A of the present application.

Applicants further submit that the portion of TAKEHANA et al. noted by the Examiner on page 3 of the Official Action (column 4, lines 27-29) provides no disclosure of *controlling a position along a depth or z axis*, but merely describes that the shape memory alloy 26 may be in strip form and extend in an axial direction of the bending member 22. Further, the following portion of TAKEHANA et al. (column 4, lines 30-35) clearly describes that the shape memory alloy 26 is “processed to previously memorize a desired bent shape”, and that temperature changes may result in transformation between such bent form and a straight form. Accordingly, Applicants submit that control of such a bending degree or angle can not reasonably be characterized as *control of a position along a depth or z axis*.

Applicants further submit, with regard to at least claims 1 and 28, that TAKEHANA et al. lacks any disclosure of shape memory alloy *which expands and contracts linearly along an axis*. In this regard, Applicants note that the shape memory alloy 26 of TAKEHANA et al. (which is disclosed as transforming between bent/angled and straight conditions) clearly does not *expand and contract linearly along an axis*, as recited in these claims.

Claim 1 further recites, inter alia, “a feedback mechanism for controlling said heater and responsive to variations in said position; wherein said position is controllable by said heater and said position can be stabilized by said feedback mechanism.”

Claim 28 further recites, inter alia, “providing a feedback signal in response to variations in said position and adjusting said temperature according to said feedback signal to stabilize said position; whereby said position is controllable by adjusting said temperature and said position can be stabilized by said feedback signal.”

Claim 33 further recites, inter alia, “stabilizing said position along said axis by a feedback mechanism.”

Applicants submit that TAKEHANA et al. lacks any disclosure of providing *a feedback mechanism or feedback signal for stabilizing a position*. In this regard, Applicants note that in the system of TAKEHANA et al. the resistance of a shape memory alloy is detected and compared to a desired value, in order to control the current passing therethrough. Note, for example, column 2, lines 42-49. Applicants submit that such resistance detection can not reasonably be characterized as *feedback for stabilizing a position*, much less a *position along a depth or z axis*.

Applicants further submit, with regard to at least claims 1 and 28, that TAKEHANA et al. lacks any disclosure of providing such *a feedback mechanism or feedback signal which is responsive to variations in a position*. In this regard, Applicants note that the resistance detection in the system of TAKEHANA et al. is clearly not *responsive to variations in a position*, but is instead responsive to the *resistance* of the shape memory alloy. Applicants submit that such resistance detection can not reasonably be characterized as *feedback which is*

responsive to variations in a position, much less a position along a depth or z axis.

Applicants also submit that dependent claims 6-12, 15-20 and 22-27, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record.

For example, Applicants submit that TAKEHANA et al. lacks any disclosure of a feedback sensor for sensing the position of the apparatus (claim 6), or a plurality of feedback sensors (claim 7). In this regard, Applicants submit that the wires 32 do not sense a *position*, nor do they constitute a *plurality* of sensors. Applicants further submit that TAKEHANA et al. lacks any disclosure of a pulse width modulated current (claim 10), much less varying the duty cycle thereof (claim 11). In this regard, Applicants submit that the discussion in TAKEHANA et al. of supplying a “current pulse” does not anticipate a *pulse width modulated current*, much less *varying the duty cycle*. Applicants further submit that TAKEHANA et al. lacks any disclosure of a Bowden Cable (claim 16) or a plurality of such extensible members (claims 17, 23). Applicants further submit that TAKEHANA et al. lacks any disclosure of a flexible printed circuit board arranged between two portions whose separation varies as the position is varied (claim 18), and in particular that element 34 does not constitute such a flexible printed circuit board. Applicants further submit that TAKEHANA et al. lacks any disclosure of a home adjustment mechanism for setting a desired home position *in the direction of the axis* (claim 19). Applicants further submit that TAKEHANA

et al. lacks any disclosure of *an x-y scan mechanism*, much less such an x-y scan mechanism which is *adjustable by the position control apparatus* (claim 22). Applicants further submit that TAKEHANA et al. lacks any disclosure of a confocal endoscope (claim 24), an endomicroscope (claim 25), a microscope (claim 26) or a colonoscope (claim 27), and that the endoscope of TAKEHANA et al. not inherently be used as any of these specifically recited structures.

Applicants respectfully submit that the rejection of claims 1, 2, 6-12, 15-20, 22-29 and 33 under 35 U.S.C. § 102(b) is improper at least for each and certainly for all of the above-noted reasons. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection, and an early indication of the allowance of all of the pending claims.

On pages 5 and 6 of the Official Action, claims 1, 3-5, 21 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over MITSUMORI (U.S. Patent No. 6,641,530).

Applicants respectfully traverse the rejection of claims 1, 3-5, 21 and 30-32 under 35 U.S.C. § 103(a).

As an initial matter, Applicants submit that the rejection of claims 30-32 is clearly improper since these claims depend from claim 28, which is not rejected over the teachings of MITSUMORI. Further, although claim 28 is not rejected, Applicants submit that MITSUMORI lacks disclosure of the subject matter of claim 28. Applicants further submit that that claims 30-32, which are at least patentable due to their dependency from claim 28, recite additional features of the invention and are also separately patentable over the prior art of record. For

example, MITSUMORI lacks any disclosure of a biaser, such as a spring, which opposes expansion or contraction of a shape memory alloy, nor would such a modification have been obvious to one of ordinary skill in the art.

Claim 1 recites, inter alia, “shape memory alloy configured and positioned to expand and contract linearly along said axis; a heater for controlling the temperature of said shape memory alloy; and a feedback mechanism for controlling said heater and responsive to variations in said position; wherein said position is controllable by said heater and said position can be stabilized by said feedback mechanism.”

Applicants submit that MITSUMORI lacks any disclosure of *a shape memory alloy configured and positioned to expand and contract linearly along an axis; or a heater for controlling the temperature of a shape memory alloy; or a feedback mechanism for controlling a heater and responsive to variations in a position; or a position being controllable by a heater and stabilized by a feedback mechanism.*

Accordingly, Applicants submit that MITSUMORI lacks disclosure of almost all of the features recited in claim 1. Further, although MITSUMORI appears to acknowledge the use of shape memory alloys in the “Background of the Invention” (column 2, lines 16-19), Applicants submit that providing all of the recited features which are not disclosed in the system of MITSUMORI (i.e., *a shape memory alloy, a heater, a feedback mechanism for controlling a heater and responsive to variations in a position*) would not have been obvious to one of ordinary skill in the art.

Applicants further submit that any attempt to modify the system of MITSUMORI to replace the disclosed and preferred driving mechanism of MITSUMORI with such a shape memory alloy, heater and feedback mechanism, would effectively destroy the teachings of MITSUMORI with regard to the specifically disclosed and preferred driving mechanism. Further, Applicants submit that the brief acknowledgement of shape memory alloys (along with piezoelectric elements and artificial muscle) in the "Background" section of MITSUMORI, followed by the disclosure of MITSUMORI's own preferred driving mechanism clearly teaches away from the use of such shape memory alloys. Applicants further submit that the modifications suggested by the Examiner are clearly the result of impermissible hindsight reasoning based upon the disclosure of the present application, rather than the teachings of the reference.

Accordingly, for these additional reasons, Applicants submit that providing all of the recited features (i.e., *a shape memory alloy, a heater, a feedback mechanism for controlling a heater and responsive to variations in a position*) in the system of MITSUMORI would not have been obvious to one of ordinary skill in the art.

Applicants also submit that dependent claims 3-5 and 21, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record. For example, MITSUMORI lacks any disclosure of a biaser, such as a spring, which opposes expansion or contraction

of a shape memory alloy, nor would such a modification have been obvious to one of ordinary skill in the art.

Applicants respectfully submit that the rejection of claims 1, 3-5, 21 and 30-32 under 35 U.S.C. § 103(a) is improper at least for each and certainly for all of the above-noted reasons. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection, and an early indication of the allowance of all of the pending claims.

On pages 6-8 of the Official Action, claims 13 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over TAKEHANA et al. in view of various secondary references. However, Applicants submit that the teachings of these secondary references do not cure the above-noted deficiencies in the disclosure of TAKEHANA et al. with regard to claim 1. Further, Applicants submit that these dependent claims, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record. In this regard, Applicants submit that these secondary references constitute nonanalogous art, and that the modifications suggested by the Examiner are clearly the result of impermissible hindsight reasoning based upon the disclosure of the present application, rather than the teachings of the references themselves. Accordingly, Applicants respectfully submit that the rejections of claims 13 and 14 under 35 U.S.C. § 103(a) are improper at least for each and certainly for all of the above-noted reasons, and respectfully request

reconsideration and withdrawal of these rejections, and an early indication of the allowance of all of the pending claims.

SUMMARY AND CONCLUSION

Entry and consideration of the present amendment, reconsideration of the outstanding Official Action, and allowance of the present application and all of the claims therein are respectfully requested and now believed to be appropriate.

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so.

Any amendments to the claims that have been made in this amendment, which do not narrow the scope of the claims, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered cosmetic in nature, and to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully Submitted,
Bradley Charles JONES et al.



Bruce H. Bernstein
Reg. No. 29,027

Daniel B. Moon
Reg. No. 48,214

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GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, VA 20191
(703) 716-1191